

ABSTRACT

Mustakim, Arif. 2011. **The Utilization of Endophytic Bacteria on Growth of Biological Fertilizer for Potato (*Solanum tuberosum*) In Vegetative Phase**. Advisor: Dr. Ulfah Utami, M. Si, and Dr. drh. Bayyinatul Muchtaromah, M. Si.

Keywords: Endophytic Bacteria, Biological Fertilizer, Potato and Vegetative Phase.

Potatoes are one of the main foods of the world. Potato production in Indonesia has decreased due to less efficient fertilization; thus, we need a more effective fertilization technique by utilization of biological fertilizers of endophytic bacteria. Endophytic bacteria live mutually beneficial symbiosis with its host plant. This study aims to determine the effectiveness of endophytic bacteria as biofertilizer on levels of nutrients (nitrogen, phosphate, and chlorophyll) and the growth of potato plant (*Solanum tuberosum*), either the number of leaves, plant height, or stem diameter in the vegetative phase.

This was an experimental study that uses a Completely Randomized Design (CRD) with eight treatments and three replications. The research was conducted in June through October 2010 in the Laboratory of Microbiology, Department of Biology, Faculty of Science and Technology, The State Islamic University of Maulana Malik Ibrahim Malang and the Greenhouse at Dusun Sumber Brantas, Desa Tulung Rejo, Kecamatan Bumiaji, Batu, East Java. While the analysis of nitrogen, phosphate and chlorophyll conducted at the Laboratory of Biotechnology Muhammadiyah University of Malang. The data analysis used single ANAVA and when the treatment was significantly influential; then, continued with BNT test with significance level of 5%. The treatment used was the provision of single endophytic bacteria (*P. pseudomallei*, *B. mycoides*, and *K. ozaenae*) and the combination of (*P. pseudomallei* with *K. ozaenae*, *P. pseudomallei* with *B. mycoides*, *B. mycoides* with *K. ozaenae*; *P. pseudomallei*, *B. mycoides* with *K. ozaenae*) that has been fermented in the seed of potato plant (*Solanum tuberosum*).

The results showed that all types of single endophytic bacterial isolates (*P. pseudomallei*, *B. mycoides*, and *K. ozaenae*) or the combination of (*P. pseudomallei* with *K. ozaenae*, *P. pseudomallei* with *B. mycoides*, *B. mycoides* with *K. ozaenae* ; *P. pseudomallei*, *B. mycoides* by *K. ozaenae*) indicates that there is no significant difference on levels of nutrients (nitrogen, phosphate and chlorophyll) and the growth of potato plant (*Solanum tuberosum*), either the number of leaves, plant height, or stem diameter in the vegetative phase.